

A synoptical revision of *Operculicarya* (*Anacardiaceae*)

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Summary : Based on herbarium material, supplemented by living material of 2 taxa, the genus *Operculicarya* is synoptically revised. All 5 recognized species of *Operculicarya* are described in detail and illustrated (leaves only), and notes on relationship and distribution are included, as well as a key to species. 3 species are described as new : *O. borealis* from the extreme N. of Madagascar, *O. hirsutissima* from the inland region of Ihosy, and *O. pachypus* from near Tuléar in S.-W. Madagascar. An additional possible species of the genus is left unnamed because insufficient material is available, and its generic affiliation with *Operculicarya* is uncertain. Only *O. decaryi* is anything like widespread, all the others appear to be narrowly endemic, and their ranges do not overlap except those of *O. pachypus* with *O. decaryi*. The relationships of *Operculicarya* with *Poupartia* and *Lannea* are shortly discussed.

Résumé : Révision synoptique du genre *Operculicarya* à partir de spécimens d'herbier et, pour 2 taxons, de matériel vivant. Les 5 espèces reconnues sont décrites en détail et illustrées (feuilles seulement) ; des notes sur leurs affinités et leur distribution, ainsi qu'une clé des espèces, sont données. Trois espèces nouvelles sont décrites : *O. borealis* de l'extrême N. de Madagascar, *O. hirsutissima* de l'intérieur, dans la région d'Ihosy, et *O. pachypus* au S.-W. de Madagascar, près de Tuléar. Une possible espèce additionnelle est laissée innommée par manque de matériel suffisant, et en raison de l'incertitude de son rattachement au genre *Operculicarya*. Seul *O. decaryi* est assez largement dispersé, toutes les autres espèces sont strictement endémiques et leurs aires de répartition ne se chevauchent pas, sauf celles de *O. pachypus* et *O. decaryi*. Les relations entre *Operculicarya* d'une part et *Poupartia* et *Lannea* d'autre part sont discutées brièvement.

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INTRODUCTION

With the recent interest in caudiciform plants among collectors of succulents and other xerophytes, members of the genus *Operculicarya* have been introduced into cultivation and are now not infrequently encountered in public and private collections. Attempts to identify the material in cultivation with the help of the original descriptions (PERRIER, 1944) or the treatment in the Flora of Madagascar (PERRIER, 1946) have met with unsurmountable obstacles, and this was the reason for undertaking a synoptical revision of the genus, which revealed the presence of additional taxa that have not been previously recognized and which were partly subsumed under the wide-spread *O. decaryi*.

HISTORICAL SUMMARY

The genus *Operculicarya* was described by PERRIER in 1944 on the basis of rather scanty material, none of the three species initially described for the new genus was completely known at that time. The subsequent treatment of the group for the Flora of Madagascar (PERRIER, 1946) did not provide significant additional information, apart from the fact that all three taxa were illustrated by line drawings.

According to the information available to PERRIER, the genus had a restricted distribution in the arid and semi-arid regions of S.-W. Madagascar.

In 1962, CAPURON removed *O. monstruosa* Perrier from *Operculicarya*. On the basis of additional material, especially fruits and seeds, it became apparent that it is not even a member of the *Anacardiaceae*, but belongs to *Commiphora* (as *C. monstruosa* (Perrier) Capuron ; *Burseraceae*). The arillate seeds leave no doubt that CAPURON's decision was well justified.

GENERIC RELATIONSHIPS

CAPURON (1975) proposed an addition to *Operculicarya* when he published the new combination *O. gummifera* for *Poupartia gummifera* Sprague (CAPURON, 1975 ; first casually mentioned in CAPURON, 1962 : 271). There can be no doubt that the genera *Poupartia* and *Operculicarya* are closely related ; most notably, they both have operculate fruits. Of the differences between the two, as indicated in the key of PERRIER (1946), the number of stamens does not seem to have any significance, and the isostemonous androecium reported for *Operculicarya* seems to be an error of observation.

The main difference between the two genera according to CAPURON (1975) appears to be the number of opercula of the fruit : *Operculicarya* has a single operculum, while species of *Poupartia* have 2-5 opercula. Moreover, the anatomy of the fruit also appears different, and these characteristics provided the base for CAPURON's transfer of *Poupartia gummifera*. Because of the very different appearance of this species, which has much larger leaves without a winged rachis and female flowers arranged in spicate to racemose inflorescences, further evaluation of its affinities is necessary but must be postponed until full material is available for anatomical studies. Consequently, *O. gummifera* is excluded from the present concept of *Operculicarya*.

The consistency of the alleged difference in operculum number between *Operculicarya* and *Poupartia* must be questioned at least in part, however, as TEICHMAN & HARDY (1992) report the occasional occurrence of more than one operculum in *Operculicarya* (8 % of 110 stones examined in what they refer to as *O. decaryi*). Moreover, they found that *Operculicarya* is very similar to *Lannea*, specifically to *L. discolor* and argue that the current status of these two genera needs reconsideration. *Lannea*, also in the tribe *Spondiadeae*, is a genus of some 40 species mainly from tropical Africa and is not currently reported from Madagascar. It seems to differ from *Operculicarya* mainly in its spicate to paniculate female inflorescences (vs. solitary in *Operculicarya*), and in the shoot system, which does not exhibit the contracted short shoots of *Operculicarya* and overall appears more similar to *Poupartia*.

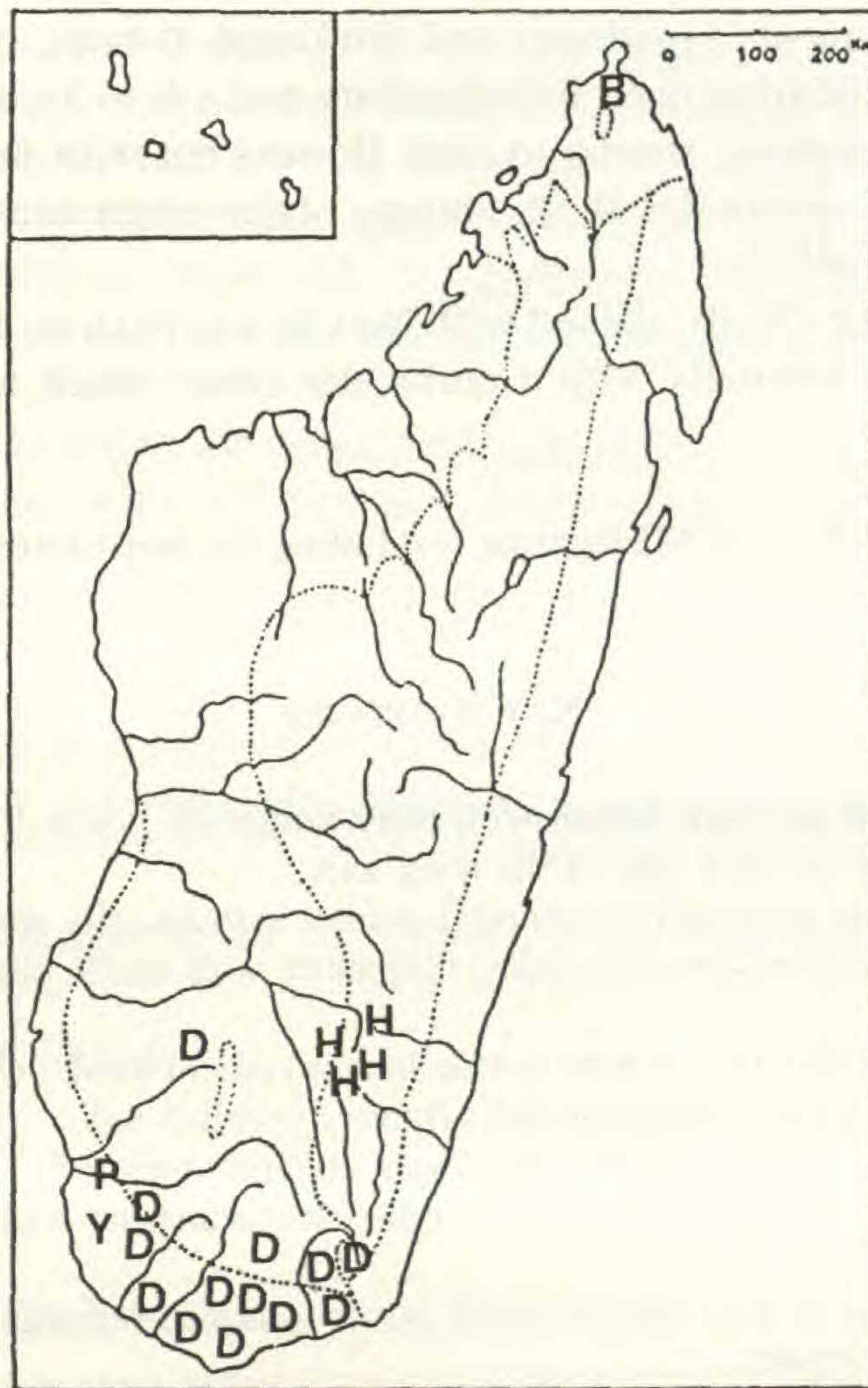


Fig. 1. — The distribution of *Operculicarya* : **B**, *O. borealis* ; **D**, *O. decaryi* ; **H**, *O. hirsutissima* ; **P**, *O. pachypus* ; **Y**, *O. hyphaenoides*.

OPERCULICARYA H. Perrier

Mém. Mus. Natl. Hist. Nat., sér. nov., 18 (7) : 248 (1944) ; Fl. Madag. 114 : 16, 18 (1946).

LECTOTYPE : *O. decaryi* H. Perrier (designated by CAPURON 1962 : 271).

Gnarled compact or open shrubs or small trees, completely dioecious as far as known ; trunk pyramidally swollen at base or bole-like and parallel-sided, always somewhat thickened in relation to plant-size ; bark irregularly bumpy-warty or smooth with superficial fissures ; ultimate primary branches (long shoots) slender, glabrous or tomentose, straight or bent \pm zig-zag-wise ; leaves alternate, internodes long ; short shoots spur-like with condensed internodes, producing a set of leaves each season ; leaves imparipinnate with 3 to 20 pairs of leaflets, rachis slightly to pronouncedly winged, leaflets glabrous and glossy or dull, or velvety to hairy, coriaceous or thin, with few to many veins.

Flowers stellate, 3-4 mm in diam. ; male flowers solitary or in few- to many-flowered spicate to paniculate solitary or fascicled inflorescences arising from the short shoots ; sepals 5, petals 5,

spreading, stamens 10, filaments broadened and thickened at base, centre of the flower with a conspicuous, thickish, discoid irregularly lobed nectary and a 3- to 5-cleft indistinct or distinct pistillodium ; female flowers solitary, similar to male flowers but with sterile anthers ; ovary globular to dome-shaped with 5 subsimilar short, stumpy styles originating at the periphery ; stigma small, appearing shortly glandular.

Fruits solitary, sessile or shortly stalked with the calyx persistent, elongate-roundish to ovoid, ca. 7 mm in diam., fleshy, normally with a unilocular stone which normally has one elongate-ellipsoidal operculum.

DISTRIBUTION : Known only from Madagascar (excluding the moist forests of the E. slopes).

KEY TO SPECIES

1. Leaflets glabrous or almost so, dark brown with paler underside when dry ; venation darker brown on underside, lateral veins 3-6 on each side of the main axis.
 2. Shrub to 1 m, trunk an irregularly pyramidal caudex with apically spreading crown ; ultimate twigs glabrous, zig-zag-wise between the nodes, frequently with sterile pungent tips ; flowers yellowish-green. *O. pachypus*
 - 2'. Shrub to 3 m or tree to 6(-15?) m with \pm bole-like or conical trunk ; ultimate twigs straight, minutely white-tomentose, without pungent tips ; flowers purplish-red *O. decaryi*
- 1'. Leaflets \pm densely hairy to tomentose, colour various ; lateral veins > 7 .
 3. Leaflets all equal, (11-)14-18(-20) pairs ; roundish-rectangular with revolute margins and raised venation on lower side *O. hyphaenoides*
 - 3'. Leaflets not all equal, in less than 14 pairs, never roundish-rectangular, without revolute margins and raised venation below.
 4. Leaflets not emarginate.
 5. Leaflets in (4-)5-7 pairs, olive-brownish when dry ; margins \pm ciliate ; lateral veins 8-12, distinctly visible on lower side ; leaves 2.8-5 cm long ; fruits sessile *O. borealis*
 - 5'. Leaflets in (9-)11-13(-14) pairs, dark dull brownish when dry, margins not ciliate ; lateral veins 5-10, hardly visible ; leaves 5.5-7 cm long ; fruits stalked, stalk 8-12 mm long *O. hirsutissima*
 - 4'. Leaflets emarginate. *O. sp. A*

Operculicarya borealis Eggl, *sp. nov.*

A speciebus ceteris generis Operculicaryae differt venis foliolorum numerosis (8-12 utroque latere costae) ; fructibus sessilibus ; margine foliolorum interdum ciliato.

TYPE : *Capuron 23097 SF*, Madagascar (Ouest-Nord) : " Forêt d'Analafondro sur sables au pied sud-est du plateau de Sahafary (bassin inférieur du Rodo) ", 27.XII.1963 (holo-, P!).

Small tree ; trunk and bark not known ; ultimate twigs more or less straight, glabrous or very insignificantly tomentulose, longitudinally striate when dry, dark brown ; older twigs sometimes with scattered, small, transverse concolorous lenticels ; short shoots often starting with 1 or 2 elongated internodes before producing the typical congested internodes and thus appearing stalked ;

leaves 2.8-5 cm long, with (4-)5-7 pairs of leaflets overlapping or just separate ; rachis narrowly winged, with scattered shaggy hairs or short bristles ; lowest leaflets almost orbicular and smaller, the other leaflets in upper 2/3 of leaf 4-8(-13) mm long, 3-4(-7) mm broad, roundish-ovate to ellipsoidal, apex rounded, never emarginate, upper side of dry leaves pale brownish and slightly glossy, glabrous or \pm tomentose, under side dull pale olive, \pm to densely white-tomentose, veins darker, conspicuous, 8-12 on each side of the midvein ; margins often somewhat ciliate.

Flowers unknown.

Fruit sessile, almost globular, the calyx lobes appressed ; stone subglabrous, laterally somewhat compressed, operculum narrowly elongate, always close to the margin.

DISTRIBUTION : Extreme northern Madagascar in the region of Diego Suarez, in partly deciduous forests, on sand.

NOTES : This taxon is easily recognized by the medium brownish dry leaves with ciliate margins and the numerous closely set side-veins readily discernible on the underside of the leaflets. In addition, the shortly to conspicuously stalked short shoots provide another distinguishing character.

MATERIAL EXAMINED : *Capuron* 22726 (P), 22954bis SF (P), 22967 SF (P), 23097 SF (type).

Operculicarya decaryi H. Perrier

Mém. Mus. Hist. Natl. Hist. Nat., sér. nov., 18 (7) : 249 (1944) ; Fl. Madag. 114 : 19-20, fig. 5, 1-6 : 21 (1946).

TYPE : *Decary* 9305 (holo-, P!) ; cf. H. PERRIER, Fl. Madag. 114 : 20.

Shrub to 3 m or more frequently tree-like to 6 m (occasionally to 15 m ?) ; trunk bole-like, bottle-shaped or conical, up to 1 m in diam., bark wrinkled to irregularly tuberculate, dark greyish ; ultimate twigs medium brownish, glabrous or minutely whitish-tomentose but then soon glabrescent, more or less straight between the nodes ; leaves 2.5-6 cm long, fresh dark green, glossy above, slightly paler below, when dry typically dark brown to blackish brown above, with or without a silvery sheen, and below medium brown with slightly darker venation ; completely glabrous or especially the rachis with some greyish to white hairs or bristles (rarely also the leaflets somewhat hairy, predominantly on the lower side) ; rachis somewhat to conspicuously broadly alate ; with (4-)5-7(-8-9) pairs of leaflets ; leaflets suborbicular (especially the lowest pair) to ovate, largest in upper 2/3 of leaf, 4-7 mm long, 3-4 mm broad, normally well separated from each other, apex round, rarely truncate or even very slightly emarginate ; venation indistinctly visible on the lower side, with 3-4 lateral veins on either side of the main vein.

Male flowers solitary or in short, paniculate, minutely bracteose and tomentose inflorescences ; sepals spreading-ascending, with minutely erose margin ; petals spreading-ascending, dark red ; stamens 10, ascending-spreading, filaments thick at base, round in cross section, nectary discoid, irregularly lobed, pistillodium 2- to 5-cleft. Female flowers solitary, pedicel 2-3 mm, easily caducous at the articulation of the pedicel ; similar to male flowers, filaments as in male flowers, anthers smaller than in male flowers and apparently sterile, nectary discoid, thickish, irregularly lobed, ovary depressed-globose with 5 thickish styles originating around the periphery and deflexed, stigma slightly thickened and shortly papillate.

Fruit globose-discoïd or droplet-shaped, with a slender stalk 5-6 mm long, with appressed remnants of the calyx, reported as green tinged with red ; stone pale ochre to honey-brown, almost smooth or slightly verrucose, with broadly trapezoid concolorous operculum.

DISTRIBUTION : S. and extreme S.-W. Madagascar, xerophytic scrub and deciduous forests, on various substrates (limestone rocks, sand, etc.).

VERNACULAR NAMES : “ Jiabiha ” (*Sussmann 170*, reports fruit as edible) ; “ Saby ” (*Bosser 3735*) ; “ Tabily ” (*Humbert 20202*) ; “ Zabihiy ” (*Decary 4383*) ; “ Zabily ” (*Service des Eaux et Forêts 1635 SF*) ; “ Zaby ” (*Humbert 14158bis*, etc.). “ Zaby ” is the vernacular name most frequently cited on herbarium labels.

NOTES : This taxon is frequently encountered in cultivation, but material here newly described as *O. pachypus* is equally frequent in collections and is invariably labelled as *O. decaryi* (ROWLEY, 1987 : 197, ill. ; TEICHMAN & HARDY, 1992). The two taxa are easily separable, however, despite the similarity in leaf characters : *O. decaryi* has dirty pinkish to dark purple flowers and is a much larger plant with a bole-like, more or less parallel-sided trunk with (at least in cultivation) quite smooth longitudinally structured bark. *O. pachypus* has pale greenish-yellow flowers, and is an altogether smaller bonsai-like shrub with a pyramidal basal stem-thickening ; the bark is irregularly bumpy-warty and conspicuously silvery-grey in old specimens. The ultimate branches are distinctly zig-zag, and their tips frequently become sterile and hardened.

MATERIAL EXAMINED : *Bosser 3735* (P), *10185* (P), *10528* (P) ; *Capuron 344 SF* (P), *9470 SF* (P), *8523 SF* (P), *18678 SF* (P), *20460 SF* (P), *27955 SF* (P), *28303 SF* (P) ; *Croat 31412* (MO) ; *Decary 3294* (P), *4383* (P), *9305* (type) ; *Fosberg 52472* (MO) ; *Humbert 12456ter* (P), *12798bis* (P), *14158bis* (P), *20202* (P) ; *Keraudren 1502* (P) ; *Leandri 4468* (P) ; *McWhirter & Capuron 163* (P) ; *Phillipson 2315* (MO), *2525* (MO, P) ; *Röösli & Rechberger s.n.* (cult.) ; *Service des Eaux et Forêts 1635 SF* (P) ; *Seyrig 865* (P) ; *Sussmann 170* (MO) ; various collections without known wild origin in cultivation.

***Operculicarya hirsutissima* Egli, sp. nov.**

A speciebus ceteris generis Operculicaryae differt foliis siccis obscure brunneo-nigris minutissime tomentosus, venis foliolorum indistinctis (5-10 utroque latere costae) ; fructibus pedicellatis.

TYPE : *Leandri 3447*, Madagascar, “ restes de forêts de la vallée de la Menarahaka entre Ihosy et Ivohibe, Antanifotsy, forêt à feuilles caduques et transition vers le bush à xérophytes ”, 600-800 m, 29.X.1960 (holo-, P!).

Small tree to 5-6 m, trunk to 0.4 m in diameter ; bark unknown ; ultimate twigs glabrous or slightly tomentose, inconspicuously longitudinally striate when dry, straight, greyish-brown to medium brown with inconspicuous small transverse lenticels ; short shoots spur-like and sessile, but able to produce long shoots ; leaves 5.5-7 cm long, dark dull brown when dry, lower side slightly paler, with (9-)11-13(-14) pairs of leaflets ; rachis inconspicuously to broadly winged ; leaflets often asymmetrically arranged, slightly overlapping or separate, lowest leaflets almost orbicular and smaller, other leaflets all about equal, 6-9 mm long, 3-4.5 mm broad, broadly ovate to rounded-oblong to elliptic, apex rounded or subtruncate, rarely very slightly emarginate ; both sides conspicuously and densely greyish hairy ; venation hardly visible, with 5-10 lateral veins.

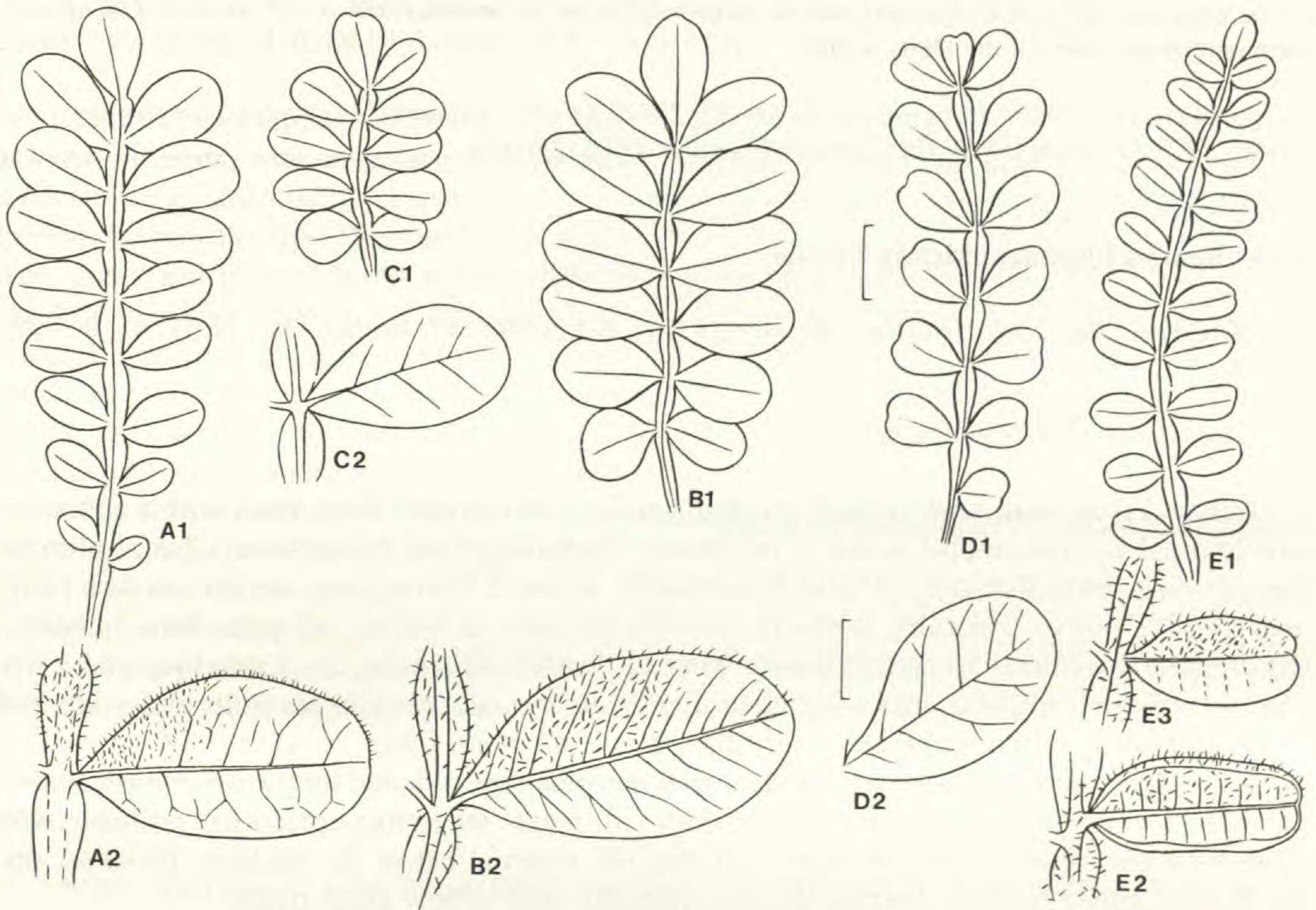


Fig. 2. — Leaf characters of *Operculicarya* : **A**, *O. hirsutissima* (drawn from the holotype) ; **B**, *O. borealis* (drawn from Capuron 22726 SF) ; **C**, *O. pachypus* (drawn from the holotype) ; **D**, *O. decaryi* (drawn from Capuron 18678 SF) ; **E**, *O. hyphaenoides* (drawn from the holotype). A1-E1 : whole leaves (scale bar = 5 mm). A2-E2 : leaflets seen from below (scale bar = 2 mm). E3 = leaflet from above (scale as in E2). Drawn by U. Woy.

Male flowers in fascicled spicate to paniculate inflorescences ; epipetalous filaments slightly united with petals at base ; nectary discoid, conspicuous, ca. 10-lobed, pistillode 3-cleft almost to the base. Female flowers unknown.

Fruit pendent, with a slender stalk 8-12 mm long, broadly ovoid, no remains of calyx observed ; stone somewhat laterally compressed, more or less smooth, operculum near margin, irregularly broadly ellipsoid to trapezoid, concolorous or paler than the rest of the stone.

DISTRIBUTION : Madagascar, inland around Ihosy, deciduous forest and transitional zone to xerophytic scrub, on gneiss outcrops.

VERNACULAR NAMES : “ Beoditra ” (*Service Forestier 119-R-239*) ; “ Botiboty ” (*Service des Eaux et Forêts 4755 SF*) ; “ Sakoakomba ” (*Service des Eaux et Forêts 4121 SF*).

NOTES : Material of this species has mostly been identified as *O. Decaryi* in the past, but is easily recognizable because of the densely hairy leaves which are dark brown to almost black in the herbarium. They

lack the marginal ciliae of *O. borealis*, which further differs in its sessile fruits. — *O. hirsutissima* appears to be a narrow endemic of the Ihozy region.

MATERIAL EXAMINED : *Capuron 23543 SF* (P), *27842 SF* (P) ; *Leandri 3447* (type) ; *Service des Eaux et Forêts 4121 SF* (P), *4755 SF* (P) ; *Service Forestier 119-R-239* (P).

***Operculicarya hyphaenoides* H. Perrier**

Mém. Mus. Hist. Natl. Hist. Nat., sér. nov. 18 (7) : 249 (1944) ; Fl. Madag. 114 : 18-19, fig. 5, 7-11 : 21 (1946).

TYPE : *Perrier 19169* (holo-, P!).

Tree to 1.5 m, with several thick gnarled trunks from common base, each with a spreading much-branched crown, trunks to 0.4 m in diameter with irregularly bumpy-warty bark ; ultimate twigs glabrous, brownish-grey, more or less straight ; leaves 2.5-6 cm long, medium to dark olive-green to olive-brown when dry, with (11-)14-18(-20) pairs of leaflets, all parts densely hairy ; rachis regularly minutely to conspicuously winged ; leaflets all similar, ca. 4 mm long and 2 mm broad, roundish-rectangular, apex truncate to slightly emarginate, margins revolute, underside with 5-7 conspicuously raised lateral veins on either side of the main vein.

Male flowers solitary, with a densely tomentose peduncle 4-7 mm long with 2 small bracteoles, sepals ascending-spreading, probably dark red, petals ascending-spreading, probably dark red with pink margins ; filaments broad and thickish, inserted below the thickish, 10-lobed, discoid nectary, anthers yellow. Female flowers reputedly with yellow-green ovary.

Fruit pendent, discoid-subglobose, reported as green with grey bloom, with a slender minutely tomentose stalk to 18 mm long which carries several vestigial bracts ; stone roundish, flattened, slightly rugulose with droplet-shaped, \pm angular, paler operculum.

DISTRIBUTION : S.-W. Madagascar, region of Lac Tsimanampetsotsa, in xerophytic scrub on limestone.

NOTE : *O. hyphaenoides* appears to be narrowly endemic to the limestone outcrops at the type locality, where it grows at least in part within the boundaries of the nature reserve named for the lake. The species is very distinctive because of its long leaves with numerous leaflets which have revolute margins and conspicuously raised venation.

MATERIAL EXAMINED : *Capuron 18649bis SF* (P), *20614 SF* (P) ; *Perrier 19169* (type) ; *Phillipson 2730* (MO) ; *Phillipson et al. 3722* (P).

***Operculicarya pachypus* Eggli, sp. nov.**

— *O. decaryi sensu* ROWLEY, *Caudiciform & Pachycaul Succ.* : 197 (1987) ; *sensu* TEICHMAN & HARDY (1992, *cum fig.*) *et auctt. hort. plur.*, non *O. decaryi* H. PERRIER (1944).

Operculicaryae decaryi aspectu foliorum similis sed maxime differt caudice valde pyramidaliter inflato, supra caudicem ramos foliosos numerosos gerens, ramis glabris fractiflexis interdum marcescentibus ; floribus omnino viridescente-flavis.

TYPE : *Humbert 2614*, Madagascar : “ Vallée de l’Onilahy, vers l’embouchure, coteaux et plateaux calcaires ”, 10-250 m, 27-30.IX.1924 (holo-, P!).

Compact bonsai-like shrub to 1 m tall ; trunk conical or irregularly pyramidal, tapering towards the apex, with irregularly bumpy-warty silvery-grey to dull grey bark ; crown spreading ; ultimate twigs indistinctly to conspicuously zig-zag between the nodes, glabrous, pale grey to greyish-brown, the tips often becoming sterile and pungent ; leaves 1.5-3.6 cm long, glabrous, dark green and glossy above, slightly paler below, or when dry dark olive-brown to brownish-black above and medium to dark brown below, appearing coriaceous ; rachis conspicuously winged, with 3-4(-5) pairs of leaflets ; leaflets almost orbicular to roundish droplet-shaped, just touching each other or well separated, largest in the middle of the leaf, 7-8 mm long, ca. 4 mm broad, apex rounded or rarely shallowly emarginate, venation indistinct on the underside, with 3-4 lateral veins on each side of the main vein.

Male flowers solitary, almost sessile and easily falling at an articulation of the short pedicel ; sepals spreading, medium green, petals greenish-yellow, spreading with somewhat revolute margins ; stamens 10, ascending, with filaments thickened at base ; nectary thickish, discoid, almost unlobed ; pistillodium small, indistinctly channelled or somewhat cleft. Female flowers unknown.

Fruits probably pendent, subglobular, laterally somewhat compressed, with a slender stalk 3-4 mm long ; stone slightly rugulose, operculum indistinct, broadly ellipsoid.

DISTRIBUTION : S.-W. Madagascar, region of La Table near Tuléar, on limestone outcrops in low xerophytic scrub.

NOTE : Encountered quite frequently in cultivation, but invariably mis-identified as *O. decaryi*. See under that taxon for a discussion.

The large numbers of field-collected plants which have appeared especially on the European market (the situation elsewhere is unknown) are reason for concern as to its conservation status.

MATERIAL EXAMINED : *Bosser 10158* (P) ; *Capuron & Chauvet 20807 SF* (P) ; *Chauvet 167* (P), *203* (P), *224* (P) ; *Humbert 2614* (type) ; *Razafindratsira s.n.* (cult.) ; *Röösli & Rechberger s.n.* (cult.).

Operculicarya sp. A

Small tree to 3 m tall ; bark greyish to greyish-brown, probably smooth ; young twigs glabrous and slightly longitudinally striate when dry ; leaves 3-4 cm long, congested in rosettes on spur-like short shoots ; 7- to 9-foliolate ; rachis only slightly alate, with some bristly stiff whitish hairs especially towards the base ; leaflets coriaceous and pale olive-green when dry, dull, largest near tip of the leaves, 7-10 mm long, 4-6(- 7) mm broad, conspicuously emarginate, with fine dense venation visible on the lower side.

Inflorescences and flowers unknown.

Fruits solitary with persistent calyx, stalk 4-5 mm with some minute bracts, minutely tomentose ; fruit elongate-ovoid, described as “ red above, pale yellow at first, becoming purple, then black ” (*Phillipson 2890*) ; stone smooth, probably without operculum (immature material studied only).

This taxon is known from only two collections, one (*Capuron 23400 SF*, Sambirano region, sterile) from the extreme N. of Madagascar, the other (*Phillipson 2890*, Ejeda-Betioky, with fruits) from the S.-W. While the general facies of the plant is more than suggestive of *Operculicarya*, the unripe stones examined have a different and very smooth texture and appear to lack an operculum. Without more material the status of these two collections cannot be resolved and for the present they are left *in limbo* as a possible additional species of *Operculicarya*.

MATERIAL EXAMINED : *Capuron 23400 SF* (P) ; *Phillipson 2890* (MO, P).

EXCLUDED TAXA

Operculicarya gummifera (Sprague) Capuron, *Adansonia*, ser. 2, 14 (4) : 571 (1975) = **Poupartia gummifera** Sprague, *Bull. Herb. Boissier*, ser. 2, 5 : 408 (1905).

Operculicarya gummifera (Sprague) Capuron var. *seyrigii* Capuron, *Adansonia*, ser. 2, 14 (4) : 572 (1975).

Operculicarya monstrosa Perrier, *Mém. Mus. Natl. Hist. Nat.*, sér. nov., 18 (7) : 249-250 (1944) ; type : *Perrier 12783*, P! = **Commiphora monstrosa** (Perrier) Capuron, *Adansonia*, ser. 2, 2 (2) : 270 (1962).

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